

**UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY**

ASSOCIATION OF NEW JERSEY
RIFLE & PISTOL CLUBS, INC., et
al.

Plaintiffs,

V.

MATTHEW PLATKIN, et al.

Defendants.

MARK CHEESEMANN, et al.

Plaintiffs,

V.

MATTHEW PLATKIN, et al.

Defendants.

BLAKE ELLMAN, et al.

Plaintiffs,

V.

MATTHEW PLATKIN, et al.

Defendants.

Civil Action No. 3:18-cv-10507-PGS-LHG

Civil Action No. 3:22-cv-4360-PGS-LHG

Civil Action No. 1:22-cv-4397-PGS-LHG

***ANJRPC* AND *ELLMAN* PLAINTIFFS' L. CIV. R. 56.1
STATEMENT OF UNDISPUTED MATERIAL FACTS**

ANJRPC and *Ellman* Plaintiffs hereby present the following undisputed material facts supporting their motion for summary judgment:

The following undisputed material facts are supported by the corresponding paragraphs in the Declaration of Blake Ellman:

1. Blake Ellman is a plaintiff in this matter and a member of ANJRPC.
2. Ellman is a firearms instructor, range safety officer, armorer, and competitive shooter.
3. Ellman is a law-abiding resident and citizen of the United States and the State of New Jersey. Ellman is not a retired law enforcement officer, and does not fall within any of the other exceptions enumerated in New Jersey's ban on ammunition magazines capable of holding more than 10 rounds of ammunition.
4. Prior to the effective date of Act A2761, Ellman is lawfully owned and kept in New Jersey ammunition magazines that qualified as "large capacity ammunition magazines" under the amended law because they were capable of holding more than 10 but fewer than 16 rounds of ammunition. He owned these magazines for lawful purposes, including self-defense in the home. But for the newly enacted ban, he would have continued to own and keep these magazines in my New Jersey home. Instead, he was forced to, in some instances, transfer non-compliant magazines and purchase new replacement magazines at considerable cost and in other instances, spend money to permanently modify other magazines thereby significantly impairing their value. Further, since the ban went into effect, he have purchased several new pistols for which he was required to pay money to permanently modify the magazines down to 10 rounds prior to receiving them in New Jersey.

5. If it were lawful, he would also acquire new magazines capable of holding more than 10 rounds of ammunition. Because of New Jersey's ban and the associated criminal penalties, he refrains from doing so.

6. He also does not fall within any of the exceptions enumerated in New Jersey's ban on common semi-automatic firearms.

7. He wishes to own common semi-automatic firearms for lawful purposes, including self-defense in the home. In particular, He would choose a common semi-automatic rifle as an option for home defense because, as an experienced firearm owner and instructor, he believes that a common semi-automatic rifle is ideally suited to his home defense needs. But for the ban, he would acquire and keep one or more common semi-automatic firearms in his New Jersey home. Because of New Jersey's ban and the associated criminal penalties, he refrains from doing so.

8. He would apply for a license to possess common semi-automatic firearms, but he know that such an attempt would be futile and he would be denied.

The following undisputed material facts are supported by the corresponding paragraphs in the Declaration of Marc Weinberg:

9. Marc Weinberg is a member of ANJRPC.

10. He am an adult citizen of the United States and resident of New Jersey. He am not a retired law enforcement officer, and he does not fall within any of the other exceptions enumerated in New Jersey's ban on ammunition magazines capable of holding more than 10 rounds of ammunition.

11. He lawfully owned and kept in New Jersey ammunition magazines that qualified as “large capacity ammunition magazines” under the amended law because they were capable of holding more than 10 but fewer than 16 rounds of ammunition. He owned these magazines for lawful purposes, including self-defense in the home. But for the newly enacted ban, he would have continued to own and keep these magazines in his New Jersey home. Instead, he was forced to sell these magazines at a substantial loss. Further, since the ban went into effect, he have purchased two new pistols for which he was required to pay money to permanently modify the magazines down to 10 rounds prior to receiving them in New Jersey.

12. If permitted to do so, he would also acquire new magazines capable of holding more than 10 rounds of ammunition. Because of New Jersey’s ban and the associated criminal penalties, he refrains from doing so.

The following undisputed material facts are supported by the corresponding paragraphs in the Declaration of Thomas Rogers:

13. Thomas Rogers is a member of ANJRPC.

14. He is an adult citizen of the United States and resident of New Jersey. He does not fall within any of the exceptions enumerated in New Jersey’s ban on common semi-automatic firearms.

15. He is a long time, experienced firearms owner, having owned and responsibly used firearms for more than 40 years.

16. He wishes to own common semi-automatic firearms for lawful purposes, including self-defense in the home. In particular, he would choose a common semi-automatic shotgun as an option for home defense because, as an experienced firearm owner, he believes

that a common semi-automatic shotgun is ideally suited to his home defense needs. But for the ban, he would acquire and keep one or more common semi-automatic firearms in his New Jersey home. Because of New Jersey's ban and the associated criminal penalties, he refrains from doing so.

17. He would apply for a license to possess common semi-automatic firearms, but he knows that such an attempt would be futile and he would be denied.

The following undisputed material facts are supported by the corresponding paragraphs in the Declaration of Scott Bach:

18. ANJRPC is a nonprofit membership corporation, incorporated in the State of New Jersey in 1936, which represents its members. Its mailing address is 5 Sicomac Road, Suite 292, North Haledon, New Jersey 07508.

19. ANJRPC represents the interests of target shooters, hunters, competitors, outdoors people, and other law-abiding firearms owners. Among the ANJRPC's purposes is aiding such persons in every way within its power and supporting and defending the people's right to keep and bear arms, including the right of its members and the public to purchase and possess firearms and magazines. The New Jersey restrictions on magazine size and common semi-automatic firearms at issue in these consolidated cases are thus a direct affront to ANJRPC's central mission. ANJRPC has many thousands of members who reside in New Jersey. ANJRPC brings the claims herein on behalf of its members.

20. ANJRPC has members, including Plaintiffs Blake Ellman and Marc Weinberg, who wish to acquire—and but for the challenged laws would acquire—for purposes of self-defense or other lawful purposes a magazine that qualifies as a “large capacity ammunition

magazine” or a firearm that qualifies as an “assault firearm” due to its magazine capacity under the revised definitions of those terms enacted by the challenged laws.

21. ANJRPC has members who owned and kept in New Jersey ammunition magazines that qualified as “large capacity” or firearms that qualified as “assault firearms” due to their magazine capacity under the revised definitions of those terms enacted by the challenged laws. But for these laws, ANJRPC members would have continued to possess these magazines and firearms in New Jersey for lawful purposes, including self-defense in the home.

22. ANJRPC has members, including Plaintiffs Ellman and Thomas Rogers, who wish to acquire—and but for the ban would acquire—one or more of the banned common semi-automatic firearms for purposes of self-defense in the home or other lawful purposes. Such members would apply for a license to possess common semi-automatic firearms, but they believe that such an attempt would be futile and they would be denied.

The following undisputed material facts are supported by the corresponding paragraphs and Exhibits in the Declaration of Emanuel Kapelsohn:

23. **Semiautomatic Firearms: Function and History** A semiautomatic firearm uses the power of the firing cartridge, typically either through diverting some of the pressurized gas from the cartridge’s burning propellant gunpowder, or through the rearward recoil produced when the projectile moves forward out of the cartridge case, to operate the gun’s mechanism, extracting and ejecting the fired cartridge case and bringing a fresh cartridge into position for firing. In a semiautomatic firearm, the trigger must be pulled separately for each shot. A semiautomatic firearm differs from a manually operated repeating firearm, such as a bolt-action, lever-action, or pump-action firearm, in which the user manually operates the mechanism to bring a fresh

cartridge into position for firing. The semiautomatic also differs from a fully automatic (“automatic”) firearm – such as a “machine gun” -- in which holding the trigger depressed will result in a continuous, rapid series of shots until the trigger is released or the ammunition supply is exhausted. Semiautomatic firearms are not a new invention. Semiautomatic rifles, shotguns, and handguns were all developed before 1900, and were in common use in the early 1900’s. Our military first adopted a semiautomatic pistol (the Colt .45 caliber Model 1911) in the year 1911.

24. Armalite, an American small arms engineering firm located in California, developed the AR-15 in the 1950’s. It was designed in large part by Eugene (“Gene”) Stoner, a famous American firearms designer whom I met and spoke with several times. In 1959, due to financial and production problems, Armalite sold its rights to its AR-10 and AR-15 designs to Colt’s Manufacturing. The model designation “AR-15” stands for “Armalite Rifle, Model 15,” not for “assault rifle” as some uninformed individuals maintain. A version of the rifle, in “select-fire” form (meaning it could, by operation of a selector switch, be fired either semiautomatically, i.e., one shot for each pull of the trigger, or fully-automatically, i.e., continuous firing as long as the trigger was held depressed), was first used by our military in the Vietnam War as the M-16. AR-15 type rifles, also called “MSRs” or “Modern Sporting Rifles,” are today among the most popular rifles sold and used in the United States. They have been manufactured by literally hundreds of companies, including Colt, FN, Ruger, Remington, Bushmaster, Rock River Arms, Wilson Combat, Barrett, DPMS Panther Arms, H&K, Lewis Machine, Olympic Arms, Palmetto State Armory, and Mossberg. The National Shooting Sports Foundation (NSSF), a firearms industry trade group, estimated about five years ago that there were, at that time, between 5 and 10 million AR-15 rifles in civilian hands in the United States. In recent years popularity and sales

of the AR-15 have increased greatly, and it has now become one of the most popular rifles and widely-used rifles in the country. AR-15s are made or assembled and sold by many manufacturers, ranging in size from one-man shops to large companies such as Colt, Ruger, Remington, Mossberg, SigArms, Rock River Arms, and others. Current estimates of AR-15 and AK-type semiautomatic firearms in civilian hands in the United States are in the range of 25 million or more. The “AK” stands for Automat Kalashnikova, or Kalashnikov Automatic Rifle. First produced as a Soviet military rifle in 1947 (thus “AK-47”), the AK was the invention of Russian firearms designer Mikhail Kalashnikov. The AK became one of the most widely-used rifles in the world, with semiautomatic versions being sold in the United States and other countries for civilian use. While made in a number of calibers, the most commonly seen caliber for the AK rifles is 7.62 x 39mm, a larger caliber than is used in the standard AR-15 rifle, which fires the .223 Remington or 5.56mm NATO cartridge.

25. The challenged version of the New Jersey “assault firearms” law has nothing to do with the military M16 select-fire rifle, only with the AR-15, the civilian semiautomatic version that fires one single shot for each separate pull of the trigger, just as all other semiautomatic firearms do. The select-fire (“fully automatic”) M16 version of the rifle is heavily regulated under federal law and other New Jersey statutes, and is not involved in this case.

26. **Semiautomatic Rifle and Pistol Magazines.** The AR-15 uses a detachable box magazine for the .223 Remington or 5.56mm NATO cartridge. These two rounds are very similar, and can be used interchangeably in many AR-15s. The most common magazine size for the AR-15, and the size of the great majority of magazines manufactured and sold for the AR-15, is 30 rounds. The next most commonly seen magazine size is 20 rounds. Magazines of 5, 10 and

40 rounds are also available, as well as other sizes, but are relatively rare. Over the past decades Kapelsohn has personally seen tens of thousands of 30-round AR-15 magazines, perhaps a thousand 20-round AR-15 magazines, and fewer than 100 AR-15 magazines of all other sizes combined. The New Jersey law is incorrect and misleading when it describes 20-round and 30-round AR-15 magazines as “large capacity ammunition magazines.” They are, to the contrary, the standard-sized magazines for the AR-15.

27. The AK-type firearms also use detachable box magazines. Far and away the most commonly seen and commonly available magazine for the AK firearms holds 30 rounds, although both smaller capacity and larger capacity magazines are available. The most widely-available and commonly seen magazines for other semiautomatic rifles, including the Ruger Mini-14, Steyr AUG, M1A, Galil and others are 20 to 30 rounds. Standard-size magazines for the M1 Carbine are 15 and 30 rounds.

28. With an estimated 25 million AR-15 and AK-type firearms in civilian hands in the United States, there are certainly many times that number of 20-round and 30-round magazines in private ownership as well. Estimates that there are currently 100 million or more 30-round AR-15 magazines in circulation are quite credible. Magazines are relatively inexpensive, with either metal or plastic 30-round AR-15 magazines commonly selling for \$10 to \$15 each, whereas the rifles in which the magazines are used may cost \$600 to \$1,000 or more. It is not unusual to see literally several thousand 30-round AR-15 and AK magazines for sale at a modest-sized weekend gun show.

29. The New Jersey law’s limit of handgun magazine size to 10 rounds imposes an unreasonable restriction on New Jersey gun owners, especially (but not only) those with

concealed carry permits. Many popular semiautomatic pistols have greater magazine capacities. Examples include the Glock 17 (17 rounds), the SIG P320 (17 rounds), and the Smith & Wesson M&P9 2.0 (17 rounds). Even the compact versions of these pistols – specifically, the Glock 19, the SIG P320 Compact, and the S&W M&P9 Compact, all have magazine capacities of 15 rounds. Some of the most popular “micro-9” pistols have magazine capacities that exceed the New Jersey limit, such as the Springfield Hellcat (11-round and 13-round magazines), the S&W Shield Plus (10-round and 13-round magazines), and the SIG P365 (10, 12, 15 and 17-round magazines). For many individuals carrying a concealed handgun for self-protection, carrying an extra magazine to compensate for the New Jersey law’s magazine size limit imposes an uncomfortable, and in some cases impossible, burden. There is no rational basis for an argument that limiting pistol magazine size to 10 rounds, as opposed to 12 or 15 or some other number of rounds, has any discernible effect on crime, or any negative effect on public safety. Most police nationwide, including in New Jersey, carry handguns that hold 16-18 rounds, plus between one and three additional loaded magazines on their persons. If police officers need that many rounds to protect themselves and the public, why should gun owners in New Jersey be limited to fewer rounds to protect themselves and their loved ones?

30. **Use and Advantages of the AR-15 Rifle.** AR-15 rifles are commonly used for both formal and informal target shooting (including each year at the National Matches at Camp Perry, Ohio), for hunting, by farmers and ranchers for control of predators and pest animals, and for self-defense. They are also widely used by law enforcement agencies as “patrol rifles,” in many parts of the country all but completely replacing the 12-gauge shotgun as the shoulder weapon carried in most police cars. Anyone visiting a retail gun store in most states will likely

see many AR-15 rifles for sale, as well as displays of magazines, accessories, and ammunition for these rifles. Similarly, someone taking a trip to most outdoor shooting ranges, and indoor ranges with rifle capability as well, will find many people target shooting with AR-15 rifles.

31. The AR-15 is especially popular because of its light weight, very mild recoil, and good ergonomics, all of which make it well suited to younger shooters, female shooters, and other shooters of smaller stature, as well as an easy rifle for larger, stronger individuals to use. All of these design features of the AR-15 – its light weight, mild recoil, and good ergonomics – as well as the adjustable length of its buttstock when fitted with a telescoping buttstock (as it commonly is), the effectiveness of its cartridge for self-defense use, and its better continuity of fire when used with its most commonly available 20-round and 30-round magazines, make the AR-15, in many cases, a much better choice of shoulder weapon for self-defense by a female user or other smaller-statured user than the 12-gauge or other shotguns that have often been recommended for that purpose in the past. The shotgun, in fact, is much harder for most women (as well as most other shooters) to use, too heavy, ill-fitting in its commonly available stock configurations, and has recoil which is far too punishing, discouraging practice and resulting in poor competence and many safety problems. For the same reasons that the AR-15 has largely replaced the shotgun in police use, it is a better choice as a self-defense weapon for many private individuals as well. Other semiautomatic rifles which would be prohibited by the New Jersey legislation are similarly good choices as self-defense shoulder weapons for women and men alike.

32. A major disadvantage of the shotguns often recommended for defense in the home is the shotgun's considerable recoil. Used with the type of shotgun usually recommended for defensive use, the typical 12-gauge shotgun often has 25 foot pounds or more of free recoil

when fired, which makes firing more than a few shots unpleasant or painful for many shooters. Even in police training programs, this much recoil becomes problematic, limiting the amount of shooting that can be done, and the familiarity and skill level with the shotgun that can be achieved. Also, the spreading pattern of shotgun pellets, whether birdshot or buckshot, creates a danger due to the possibility of pellets missing the intended target, even with a properly-aimed shot. In contrast, the AR-15 and similar semi-automatic rifles have little perceptible recoil, and are therefore much more pleasant to shoot. More shots can therefore be fired in training, and better familiarity with the firearm and accurate results can thus be more easily obtained. In many thousands of law enforcement agencies nationwide, the switch from shotguns to AR-15s and similar semiautomatic rifles as shoulder weapons has resulted in officers handling the guns with greater confidence and competence, and firing with accuracy, even at distances of 50 yards and more, far exceeding the accuracy most officers were ever able to achieve with shotguns. This results not only in greater effectiveness when the rifle must be used for self-defense, but greater safety as well, not only for the user but for any others who may be in the area. The same effectiveness and safety should be available to non-police officers as to police officers.

33. **Use of the AR-15 and Similar Rifles for Self-Defense.** The fact that AR-15s and similar semiautomatic rifles are suitable for self-defense use by private individuals is supported by many examples of such use. For example, a pregnant mother used an AR-15 to save the life of her husband, killing one of the two intruders who were terrorizing her family. **Exhibit 2** is a true and correct copy of the digital article “Pregnant Florida Mom Uses AR-15 to Kill Home Intruder.”

34. Another example was in Glen St. Mary, Florida in 2018, where seven home

invaders were fought off by their would-be victim using an AR-15. One of the seven invaders was killed, and five others were arrested. The defender fired over thirty (30)shots in the process, underscoring the need for magazines that hold more than a few rounds of ammunition. **Exhibit 3** is a true and correct copy of the digital article, “Deputies: 30 Rounds Fired From AR-15 in Deadly Florida Home Invasion.”

35. In another case, in Oswego, Illinois, a man named Dave Thomas, who was in legal possession of an AR-15, used it without the need to fire a single shot to stop a man who was repeatedly stabbing one of his neighbors. **Exhibit 4** is a true and correct copy of the digital article “Man Armed With AR-15 Stops Attack By Neighbor in Oswego.”

36. In the highly-publicized 2017 active shooter event at the First Baptist Church in Sutherland Springs, Texas, in which the gunman killed 27 people and wounded 20 others, a 55-year-old plumber living across the street from the church, alerted by his daughter that a man was shooting people at the church, got his AR-15 out of his gun safe, loaded it, and exchanged shots with the gunman, hitting him twice, and then flagged down a passing motorist to pursue the gunman together when the gunman attempted to flee from the scene. **Exhibit 5** is a true and correct copy of the digital article, “Texas Hero Reportedly Used His Own AR to Confront the Sutherland Springs Shooter.”

37. In a case in Harris County, Texas in 2013, a 15-year-old boy, at home with his little sister, used an AR-15 to drive off two burglars who had broken a window to enter the house. They fled, leaving a trail of blood. **Exhibit 6** is a true and correct copy of the digital article, “Harris County Deputy’s Son Shoots One of Two Intruders.”

38. Also in 2013, a man with a .223 AR-15-type rifle in Montgomery County,

Pennsylvania, successfully defended himself and his wife against an intruder, who died later in the hospital. **Exhibit 7** is a true and correct copy of the digital article, “Elkins Park Man Killed After Forcing His Way Into Apartment.”

39. In 2017 in Broken Arrow, Oklahoma, three masked intruders were shot and killed by 23-year-old Zach Peters, the son of the home’s owner, using an AR-15 rifle. The shooting was ruled justifiable. **Exhibit 8** is a true and correct copy of the digital article, “Shooting Deemed Justifiable: Authorities Say Zach Peters Acted Lawfully When He Shot, Killed Three Intruders.”

40. Numerous other cases in which the AR-15 and other semi-automatic rifles have been used in self-defense can be found. The fact that several of the above examples are cases in which a homeowner or other private citizen has had to fight off multiple attackers is significant in explaining the need for semiautomatic firearms and magazines that hold 20-30 rounds of ammunition.

41. It is incorrect, and in fact a common myth, that the .223/5.56mm projectile fired by the AR-15 and other rifles under consideration is too penetrative to be used safely for self-defense inside and around homes, businesses, farms and ranches. If that were the case, police would not be using AR-15 “patrol rifles” nationwide, including in urban and suburban areas, and as entry weapons for indoor searches and arrests. The fact is that with properly selected ammunition, the .223/5.56mm actually presents less danger of overpenetrating walls, floors, ceilings and criminal attackers than conventional self-defense handgun bullets in calibers such as 9mm, .40 S&W, and .45 Auto. This is because the .223/5.56mm has a much higher muzzle velocity and fires a much smaller, lighter projectile which, if properly selected as to projectile type (e.g., the self-defense type rounds that are widely available where ammunition is sold), will

fragment easily and will be unlikely to penetrate as many sheetrock partitions or other common building elements as many common handgun bullets. Kapelsohn has demonstrated this to classes of police and others by firing through sheetrock and other materials, and many published studies confirm the same results. See **Exhibit 9** an article by R.K. Taubert (FBI, Ret.), “About .223 Penetration,” **Exhibit 10** “Real World Testing: .223/5.56 Penetration Tests vs. .40 S&W and 12 ga. Slug,” and **Exhibit 11** “Why ‘High-Powered’ 5.56 NATO/.223 AR-15 is Safer for Home Defense (FBI Overpenetration Testing),” Prepared Gun Owners, July 14, 2016.

42. **Features of the AR-15 and Other So-Called “Assault Weapons.”** The New Jersey statute, in addition to listing a number of prohibited “assault weapons,” identifies several features that supposedly distinguish “assault weapons” – as it defines that term -- from ordinary semiautomatic firearms. In actuality, the term “assault weapon” (unlike “assault rifle,” which is a compact, lightweight select-fire rifle firing an intermediate-powered cartridge) is a pejorative term created by legislative draftsmen which has no technical definition in the firearms field. *See Standards & Practices Reference Guide for Law Enforcement Firearms Instructors*, P. Covey and E. Kapelsohn, 1995, “assault rifle” and “assault weapon,” p. 5 ff.

43. The New Jersey statute categorizes as “substantially identical” to the banned firearms, and thus also banned, semiautomatic rifles that have the ability to accept a detachable magazine, and at least two of the following features:

- i. a folding or telescoping stock;
- ii. a pistol grip that protrudes conspicuously beneath the action of the weapon;
- iii. a bayonet mount;

- iv. a flash suppressor, or a threaded barrel designed to accommodate a flash suppressor; or
- v. a grenade launcher.

44. The statute also prohibits a semiautomatic shotgun that has at least two of the following features:

- i. a folding or telescoping stock;
- ii. a pistol grip that protrudes conspicuously beneath the action of the weapon;
- iii. a fixed magazine capacity in excess of 5 rounds; or
- iv. an ability to accept a detachable magazine.

45. Having extensive personal experience as a user, as a firearms instructor, and as a consultant, with all of the design features identified by the legislation, and with their practical effects on the capabilities of firearms, Kapelsohn has addressed these features below.

46. **Pistol Grips.** One of the New Jersey law’s prohibited features is a “pistol grip that protrudes conspicuously beneath the action of the weapon.” The AR-15 is, as discussed above, a semiautomatic version of the select-fire military M16 and its predecessor, the Armalite Rifle Model 15 (“AR-15”). The M16 is designed, as its “select-fire” description indicates, to fire either semiautomatically, or automatically (“full-auto”) by the positioning of its safety/selector

lever for one or the other mode of fire. When firing automatically (“full-auto”), the military M16 has a cyclic rate of fire of 750-900 rounds per minute. In practical effect, with the most commonly used 30-round magazines, a shooter firing an M16 full-auto may actually be able to discharge roughly 250-300 rounds per minute, although not necessarily with good accuracy. In order to allow military users of the M16 to fire it full-auto while staying on target, rather than having significant “muzzle climb” while firing, the M16, and similar fully-automatic or select-fire rifles, employ what is termed a “straight-line design,” meaning that the rifle’s barrel and its stock, which is placed on the user’s shoulder when firing, are in a straight line, so that recoil is transmitted straight rearward into the user’s shoulder along the axis of the bore, which is the axis of recoil. **Exhibit 12** is a diagram of a standard AR-15/M16, showing this straight-line design. In order to make the straight-line design possible, the front and rear sight assemblies of the M16 and AR-15 are raised considerably (about 2-1/2 inches) above the line of the rifle’s bore (barrel), so that they will be in line with the shooter’s eye for aiming, when the rifle’s buttstock is seated on the user’s shoulder in firing position. This differs from the conventional design of sporting rifles and shotguns (generally wooden-stocked), in which the sights are mounted much closer to the axis of the bore/axis of recoil, and the buttstock angles downward significantly to reach the user’s shoulder. Because the buttstock and the point of shoulder support is thus significantly below the axis of recoil, such conventionally-stocked rifles exhibit a great deal of “muzzle rise” when each shot is fired. This slows down even semiautomatic or manually-operated shots from conventionally-stocked rifles, and would make it very hard to keep them on target if they could be made to fire full-auto. The purpose of the M16’s straight-line design is to eliminate this muzzle rise from shot to shot. However, because the M16 and AR-15 have a stock which comes straight

back from the rifle's receiver to the user's shoulder, it then becomes necessary to provide a "pistol grip" that protrudes downward from the rifle's receiver ("action," per the New Jersey statute). Otherwise, the user would have to raise his or her dominant arm uncomfortably high to grip the rifle, operate the manual safety, and pull the trigger. In such a position, the dominant hand could interfere with aiming the rifle, in addition to which the trigger and trigger guard of the M16 and AR-15 are not located in a position that would make this contorted arm and hand position easily performable. The design purpose of the M16/AR-15's pistol grip is to position the user's hand properly and comfortably behind the trigger and trigger guard of the rifle – a position which would not be feasible for the user to assume without the pistol grip – and, in the case of the M16 when fired full-auto in military use, to provide better control of the rifle in full-auto fire.

47. Even when the rifle is fired semiautomatically, in the normal manner for the "civilian" AR-15, the straight-line stock design and the pistol grip reduces muzzle rise, allowing more accurate fire and faster follow-up shots.

48. Contrary to the claims of some anti-gun activists, a pistol grip on a rifle stock does not allow the rifle to be "wildly spray fired" in all directions. Certainly our Department of Defense would not want our military rifles, including our M16 and later evolved M4 rifles, to be so equipped. Neither would law enforcement agencies all over the United States, which are concerned with the accuracy and safety with which their AR-15 patrol rifles can be fired, including in areas which may be densely populated with innocent bystanders. The pistol grip on the AR-15 stock, and pistol grips on the stocks of other semiautomatic rifles and shotguns, also do not allow these rifles to be reloaded any faster than similar firearms without pistol grips. Instead, pistol grips on semiautomatic rifles and shotguns simply provide an appropriate and comfortable

way of gripping these firearms, without contorting one's hand, wrist and arm into an unnatural position.

49. Largely because pistol grip stocks on semiautomatic rifles have proven to be so comfortable, and to permit good control of the weapon and its controls, pistol grip stocks have in recent years grown in popularity on semiautomatic and pump-action shotguns as well. As with pistol grip stocks on semiautomatic rifles, pistol grip stocks on semiautomatic or other shotguns do not especially permit or induce "spray firing" (whatever that means), or faster reloading of the firearms. Pistol grip stocks do not make the rifles or shotguns better suited to criminal purposes, and do not create a public safety problem. Pistol grip stocks are not "evil." Pistol grip stocks, commonly used on rifles and shotguns throughout most of the United States, are simply a feature the New Jersey legislature seems to have chosen to identify rifles and shotguns it wishes to make illegal, with no apparent reason that supports such action.

50. **Folding or Telescoping Stocks.** Another of the prohibiting features for both semiautomatic rifles and shotguns in New Jersey, is the firearm having a "folding or telescoping stock." While the AR-15 can be equipped with a solid (that is, not telescoping) buttstock, telescoping buttstocks are far more popular, and are in fact standard on most AR-15 rifles sold today throughout the country, as well as on many other models of semiautomatic rifles.

51. What telescoping buttstocks actually do is allow for the rifle stock to be adjusted to properly fit the user. The U.S. military's current telescoping buttstock for its M4 rifle (the modern evolution of the M16) allows the stock to be set for any of four to six different lengths. This allows the rifle to be used comfortably and fired accurately by shorter-statured shooters, including female shooters among others. It also allows the rifle to be adjusted for comfortable,

accurate firing from different shooting positions, as a stock length that works well in the standing position may be too long for optimum use from a sitting or kneeling position. The telescoping stock also allows the stock to be shortened when the shooter is wearing heavy clothing, as in wintertime, and lengthened when lighter clothing is worn in warmer weather. Telescoping-style adjustable stocks are used for these same reasons on many other firearms other than semiautomatic rifles, including both pump-action and semiautomatic shotguns, for example the Mossberg pump-action Model 500 Tactical and ATI Tactical shotguns.

52. Folding stocks, in contrast to telescoping stocks, offer law-abiding firearms users the advantage of storing the firearm more conveniently, and transporting it to and from the range in a more compact carrying case. A folding-stock semiautomatic rifle or shotgun with its stock folded is still not a particularly concealable firearm, and handguns, not rifles or shotguns with either a folding or a telescoping stock, will remain the firearms most often used by criminals.

53. **Bayonet Mounts.** Another prohibited feature is a “bayonet mount,” sometimes called a “bayonet lug.” This is typically a small steel block, welded to the barrel of a firearm a few inches back from the muzzle, which can be used to attach a bayonet to the rifle or shotgun. In fact, bayonet mounts are common on many types of civilian rifles and shotguns. Bayonet mounts have approximately zero significance with regard to crime and public safety in the United States. One would be hard pressed to find crimes committed with bayonets mounted on rifles or shotguns. One never hears, for instance, of “drive-by bayonettings.” Again, the New Jersey statute’s prohibiting of bayonet mounts, while sensational, is largely superfluous.

54. **Flash Suppressors and Threaded Muzzles.** Another of the prohibited features is a “flash suppressor,” or a threaded barrel designed to accommodate a flash suppressor. A flash

suppressor is a fixture on the end of a rifle's barrel that divides and diverts the muzzle flash through several slots or holes, most commonly arranged radially around the axis of the bore. The most common type of flash suppressor on AR-15 rifles is probably the Mil Spec A2 birdcage type, which has four slots from about the nine o'clock to three o'clock positions (that is, around the top 180 degrees of the suppressor), but is solid on the bottom in order not to raise clouds of dust or dirt when firing from a prone position on dry ground. **Exhibit 13** is a picture of an A2 birdcage flash suppressor. Flash suppressors are not expensive accessories; for example, the Aero Precision A2 birdcage-type suppressor shown in Exhibit 13 retails for \$7.99.

55. The major advantages of a flash suppressor on a rifle's barrel are: (1) the reduction of muzzle flash so as not to temporarily blind a shooter who is firing in a darkened environment, whether in a defensive situation or on an indoor shooting range, and (2) the reduction of muzzle flash from a military rifle, so as to minimize the illumination of the shooter, which might reveal his location to enemy troops in darkened environments. The flash suppressor also serves to protect the muzzle of the rifle from dirt, mud, sand, etc., which could dangerously plug the muzzle if it were to touch the ground outdoors. Purpose (2) above, which is primarily military in nature, is of questionable importance in regard to the criminal use of firearms in the civilian world. Purpose (1) above is important in a rifle used for self-defense by civilians, and legislation that prohibits flash suppressors makes rifles less suitable for self-defense use by civilians. Law enforcement statistics indicate that a high percentage of violent crime occurs during the hours of darkness, or in otherwise darkened environments (poorly lighted indoor areas, for example). **Exhibit 14** is a digital article from Security Magazine, "Violent Crimes Most Likely to Occur At Night." The use of a rifle without a flash suppressor under those

circumstances is likely to temporarily blind the user, or at least seriously impair the user's vision, placing the law-abiding user at a disadvantage to a criminal attacker, and increasing the danger to the public if the vision-impaired user must fire the rifle before his or her normal visual abilities return after an unsuppressed muzzle flash in the dark. **Exhibit 15** provides an example of the difference between an AR-15's muzzle flash with no flash suppressor (Exh. 15A), and the muzzle flash when a suppressor is used (Exh. 15B).

56. The value of the flash suppressor in protecting the rifle's muzzle from being damaged, or from being plugged with mud, dirt or sand if the rifle's muzzle touches the ground, is significant, and is stressed by some instructors in defensive rifle classes. I have personally seen a firearm's barrel burst upon firing when the muzzle was plugged with mud after inadvertent contact with the ground. Luckily no one was injured, but the results could have been catastrophic.

57. A great many rifles today come standard from the manufacturers with threaded muzzles, with the threads protected by screw-off metal caps. These threaded muzzles will allow the attachment of various muzzle devices, including flash suppressors, recoil-reducing muzzle brakes, or sound suppressors (so-called "silencers"). While sound suppressors are prohibited for civilian ownership in New Jersey, they are legal, with proper federal licensing, in many other states, including nearby Pennsylvania. Contrary to their portrayal on television and in movies as instruments of crime, sound suppressors do not make the report of most firearms nearly inaudible, and the suppressors have many legitimate purposes on semiautomatic rifles used for defensive purposes, whether by police or private individuals. The most important of those legitimate purposes is to allow the user to fire the rifle, especially in indoor environments, without suffering permanent hearing loss from the sound of shots. This can occur because, unlike shooting on a

firing range while wearing hearing protectors, firing a .223 rifle without hearing protection, as would likely be the case in a self-defense situation, can in many cases result in some degree of permanent hearing loss. For this reason, police departments today are often equipping their AR-15 patrol rifles with sound suppressors to protect the hearing of their police officers.

58. Even though sound suppressors are not legal for civilian ownership in New Jersey, and regardless of whether or not the user wishes to, or can legally, attach a flash suppressor to the muzzle of the rifle, the fact that New Jersey's "assault firearm" statute prohibits rifles with threaded muzzles eliminates many excellent threaded-muzzle firearms from being able to be sold, purchased or possessed in New Jersey, despite the fact that the threaded muzzle, in and of itself, has little if any effect on crime or public safety.

59. One of the muzzle devices a threaded muzzle allows the user to attach to a rifle is a muzzle brake, which is a recoil-reducing device. Muzzle brakes are advantageous, are preferred by many shooters, and are perfectly legal under New Jersey law. But because the New Jersey law lists threaded muzzles as one of the prohibiting features, it makes it much more difficult, if not in some cases impossible, for a New Jersey gun owner to make use of a muzzle brake for his semiautomatic rifle.

60. **Prohibited Pistol Features.** The New Jersey statute also prohibits semiautomatic pistols that have the ability to accept detachable magazines and have at least two of the following features:

- i. magazine that attaches to the pistol outside of the pistol grip;
- ii. A threaded barrel capable of accepting a barrel extender, flash suppressor, forward handgrip, or silencer;

- iii. A shroud that is attached to, or partially or completely encircles, the barrel and permits the shooter to hold the firearm with the non-trigger hand without being burned; or
- iv. A manufactured weight of 50 ounces or more when the pistol is unloaded.

61. The attachment point of the pistol's magazine (item i above) has nothing to do with the pistol's safety or its usefulness to criminals. Like other features discussed above, this is an arbitrarily-chosen feature that is only useful as a means of criminalizing certain firearms, with no rational basis for doing so.

62. Threaded barrels (item ii of Paragraph 66) have already been discussed above. The threaded barrel itself does not make the handgun "evil" or unsafe. Increasing numbers of handguns today come from the factory with threaded muzzles. The advantages of a flash suppressor have already been discussed, and will not be covered again here. Flash suppressors are, in any event, rarely used on handguns. Silencers are illegal for ownership by private individuals in New Jersey, so it seems fairly senseless to prohibit a pistol with a threaded barrel simply because that feature might allow the pistol to be fitted with a silencer. A "barrel extender" is usually a purely cosmetic feature, affecting only the appearance of the handgun. A forward handgrip may allow some people to hold pistol more firmly and fire it more accurately. It is hard to see why the New Jersey legislature would be opposed to this.

63. A barrel shroud (item iii of Paragraph 66) serves to protect the shooter's hand from being burned by a barrel that has become hot from firing. Barrel shrouds have been commonly used on rifle and shotgun barrels since the early 1900's, and are available on many

rifles and shotguns today. It is hard to see how a device that serves to protect the user's hand, and that is legally provided on many rifles and shotguns, should be illegal when used on a handgun.

64. The total weight of the handgun (item iv of Paragraph 66), at 50 ounces when unloaded, makes the described firearm unusually large and heavy for a handgun. This, in turn, makes the handgun less easily concealed and carried, whether by a criminal or a law-abiding user. It is difficult to see how this forms a rational basis for prohibiting a firearm.

65. **Shotgun Magazine Capacity.** Another of the prohibited features is a semiautomatic shotgun with a fixed magazine capacity of over five rounds. Many semiautomatic shotguns intended for self-defense use have magazine capacity of over five rounds. The Mossberg 930 (8-shot capacity) and several of the excellent Benelli tactical shotguns are examples. Because shotguns with fixed (i.e., tubular) magazines must be reloaded one round at a time – a slow and difficult process at best in a stressful self-defense situation – the magazine capacity of the shotgun is an important feature, as larger capacity reduces the likelihood that reloading during the midst of a self-defense shooting incident will be necessary.

66. **Conclusion.** New Jersey's so-called "assault weapon" legislation appears to focus primarily on cosmetic features of firearms. In fact, the AR-15 is just another semiautomatic rifle, a type of firearm that has existed since about 1900. The AR-15 is, in many cases, an excellent rifle for law-abiding citizens to use for self-defense, as well as for target shooting, recreational shooting, and hunting or control of predators, rodents and other pest animals where game laws permit. Features such as flash suppressors, threads at the muzzle end of the barrel, pistol grips, telescoping or folding stocks, bayonet mounts, and the other features discussed above are of little significance to criminals, but serve to criminalize rifles and shotguns, widely used by

the tens of millions throughout most of the United States, that are useful, accurate, and safe for law-abiding citizens to use. Pistol grips, flash suppressors, threaded muzzles, telescoping or folding stocks, detachable magazines for semiautomatic rifles, and shotgun magazine capacity in excess of five rounds, all have legitimate advantages to the law-abiding user. These are not “evil” features, and are not features that particularly suit the firearm to criminal use, rather than to legitimate use by law-abiding gun owners. It appears that this legislation is either ill-informed, or that its intent is to prohibit some of the most widely used – because they are the most useful – firearms in existence in the United States, which are regularly chosen by law-abiding Americans to protect themselves and their loved-ones from violent crime.

67.

- i. Semi-automatic handguns, rifles and shotguns are not new, “evil” creations, but have been in use since before 1900.
- ii. The AR-15 and AK-type semiautomatic rifles are owned and used by millions of law-abiding Americans for lawful purposes including self-protection, recreational shooting, hunting, and pest control.
- iii. 20-round and 30-round semiautomatic rifle magazines are not “large capacity ammunition magazines,” as the New Jersey law misleadingly states. To the contrary, these are the standard-sized magazines for many of the semiautomatic rifles addressed in this lawsuit.
- iv. AR-15 rifles are accurate, reliable, safe and easy to use effectively, which is why these rifles are often the firearms chosen by law enforcement and by private individuals for defensive use.

- v. Limiting New Jersey gun owners to 10-round magazines for their semiautomatic rifles and pistols imposes an unreasonable and arbitrary disadvantage on them, which negatively affects their ability to defend themselves and their loved ones against violent criminal attack.
- vi. Pistol grips on semiautomatic rifles and shotguns are not “evil” features, but have practical advantages in allowing the firearms to be controlled and fired accurately. On the AR-15, for example, these advantages are why Eugene Stoner, one of the world’s foremost firearms designers, designed the AR-15 with a pistol grip rather than with some other kind of stock.
- vii. Telescoping stocks are not “evil” features, but can be adjusted to allow rifles and shotguns to be handled and fired effectively by shooters of various statures, in various shooting positions, and when wearing various types of clothing or equipment.
- viii. Folding and telescoping stocks for rifles and shotguns allow the firearms to be stored more conveniently, and transported more easily. Even when folded or retracted, these stocks do not make the rifles or shotguns so small as to be easily concealed by criminals. Handguns will remain the weapons of choice of most criminals, as they have always been.
- ix. It is unlikely that the technical restrictions of the New Jersey law will be heeded by violent criminals, or that these restrictions will have any noticeable effect on crime.
- x. Bayonet mounts are basically irrelevant to the use of firearms by criminals, and

the inclusion of bayonet mounts in the list of prohibited features will have no noticeable effect on crime or public safety. The only effect of this provision will be to make many excellent rifles and shotguns unavailable for sale to or ownership by New Jersey gun users.

xi. Flash suppressors on AR-15s and other semiautomatic rifles have a valuable purpose, make the rifles safer to use in dim light, and improve public safety as well.

xii. Threaded muzzles per se have no significant impact on crime or public safety. The prohibition of threaded muzzles makes many excellent firearms unavailable for sale to or ownership by New Jersey gun users. The prohibition of threaded muzzles also makes it difficult or impossible for New Jersey gun users to use muzzle brakes – a perfectly legal device with valuable recoil-reducing advantages – on their firearms.

xiii. Some of the prohibited features in the handgun section of the law, such as barrel shrouds, provide specific, legitimate advantages to the firearms user. Other prohibited handgun features, such as where the magazine attaches to the handgun, or whether the handgun has a barrel extender, are arbitrary and irrelevant to crime and public safety. The overall effect of the handgun section is simply to criminalize various handguns, based on an arbitrary list of features.

xiv. Especially given the slowness and difficulty of reloading a tubular-magazine shotgun during the stress of a self-defense confrontation, the limitation of semiautomatic shotguns to a capacity of 5 rounds places New Jersey gun users

at a significant disadvantage in confrontations with violent criminal attackers.

The following undisputed material facts are supported by the corresponding paragraphs and Exhibits in the Declaration of Ashley Hlebnsky:

68. 1. Until recently, civilians often had superior firearms than the military. The 1986 Hughes Amendment, a civilian machine gun ban, shifted that trend in the opposite direction. 2. Technologies often associated with modern day have roots back as far as the 1400s in some respects, and those modern-day firearms are the direct descendants of a centuries long trail of innovations that gradually and continually advanced firearms technology for the purpose of increasing efficiency and effectiveness. 3. It is likely that individuals during the Founding Era were aware (a) that these technologies existed before and at the time of the Founding Era and immediately thereafter and (b) that firearm technology previously underwent and would in the future undergo significant change and innovation.

69. **Terminology.**¹

Overarching Terms:

Arms: Short for armaments; blades, bows, firearms, etc.

Firearm: A portable gun

Gun: A device incorporating a tube from which bullets, shells, or other projectiles are propelled by explosive or expanding gases.

Weapon: An object used for threatening or inflicting bodily harm (whether for defensive or offensive purposes). The military refers to firearms as weapons.

¹ For purposes of this report, some of the definitions have been modified slightly to align with New Jersey statutes.

Types of Firearms:

Carbine: A shorter rifle, usually with a 20 inch or less barrel

Handgun: a short-barreled firearm meant to be fired with one hand. The term pistol is often used interchangeably.

Machine Gun: An automatic firearm either portable or mounted.

Musket: A military long gun, typically smoothbore, meant to be fired from the shoulder or off a rest.

Revolver: A type of handgun that has a revolving cylinder.

Rifle: A firearm with *rifling*, designed to be fired from the shoulder.

Shotgun: A smoothbore gun (*no rifling*) that fires shot (smaller pellets).

Submachine Gun: An automatic firearm that is portable and fires a pistol cartridge.

Parts of a Gun:

Barrel: The component of a firearm through which projectiles travel.

Bore: The hollow portion inside a gun barrel.

Breech: The rear end of the barrel.

Chamber: The part of the barrel in which a cartridge is inserted before being fired.

Cylinder: The rotating portion of a revolver, consisting of multiple chambers.

Forearm: A wooden or synthetic stock, forward of the breech, where a shooter can rest their hand to support the firearm. The forearm is there to protect the shooter's hand from the heat of the barrel.

Frame: Also known as the receiver; the part of the firearm that holds together barrel, hammer, and trigger.

Grips: The portion of the firearm the user holds. Grips come in many forms, including half or partial, pistol, and forward grips.

Hammer: The part of a firearm that swings to impart a blow to ignite the cartridge.

Magazine: A container, detachable or fixed, where ammunition is stored while feeding a repeating firearm. *Note: Not interchangeable with clip, a device to feed ammunition into a magazine.*

Muzzle: Open end of the barrel from which projectiles emerge when fired

Receiver: Also known as the frame; the part of the firearm that holds together barrel, hammer, and trigger.

Rifling: Spiral grooves inside a barrel used to spin a bullet, much like throwing a football.

Safety: A mechanism designed to prevent accidental discharge.

Sight: Instruments to align a gun to fire accurately.

Smoothbore: An unrifled barrel.

Stock: The wood or synthetic part of the gun that a user holds.

Trigger: A mechanism that activates the firing sequence.

Striker: Also known as a linear hammer, the part of the firearm where a spring-loaded rod is used to strike the primer of a cartridge.

Types of Modern Actions:

Action: The way a gun operates.

Automatic: A firearm that fires continuously when a trigger is pressed and stops either when the trigger is released, the firearm is out of ammunition, or it malfunctions.

Note: You may see the term “Automatic Handgun.” This is a colloquial term used for early semi-automatic handguns. They are not machine guns.

Bolt Action: A firearm with a breech that is opened by turning and sliding a bolt.

Break Action: A type of firearm in which the action opens at the breech to load ammunition into the chamber.

Double Action: A type of firearm in which the trigger does two actions, both cocking and firing the gun.

Lever Action: A firearm that uses a lever by the trigger guard to chamber a cartridge and typically, eject a spent case.

Over/Under: A type of firearm where two barrels sit one on top of the other and are loaded at the breech. Another similar style is a Side-By-Side.

Semi-Automatic: (*self-loading*) A firearm in which one round is fired each time the trigger is pressed. The firearm fires one round and chambers another to be ready when the user presses the trigger again.

Single Action: A type of firearm in which the trigger essentially does one action. A person must cock a hammer before pressing the trigger to fire the gun.

Slide Action: (*pump action*) A firearm that has a moveable forearm to chamber a round to be ready to fire and eject a spent case after a round is fired.

Ammunition:

Caliber: The internal diameter or bore of a gun barrel.

Cartridge: A type of ammunition that contains a bullet or shot, propellant, and a primer within a case.

Bullet: Projectile.

Shot: Collective term for a group of bullets or pellets.

Propellant: Usually gun powder or smokeless powder. After ignition, the propellant forces the bullet out of the gun.

Primer: A catalyst to ignite propellant.

Case: The housing of cartridge components (metallic, paper, plastic).

Gauge: A term of measurement to describe the internal diameter of a shotgun barrel. It is determined by how many lead balls of that diameter makes one pound; the smaller the bore (caliber), the higher the gauge number because smaller bores take more round balls to make up a pound.

Exception to the Rule: The .410 bore is also a shotgun caliber that does not follow the standard gauge designation and definition.

Shotgun Shell: A form of ammunition loaded with shot or slugs, designed to be fired from a shotgun.

Centerfire: A type of cartridge that fires by a firing pin striking a separate primer in the center of a cartridge case.

Rimfire: A type of cartridge that fires by a firing pin striking a priming compound in the rim of the cartridge case.

Paper Cartridge: A cartridge composed of a powder charge and projectile wrapped in combustible paper that serves as wadding to ensure the projectile is tightly held in the barrel.

70. The term assault weapon (or the equivalent New Jersey legislative term “assault firearm”) is used in this record based on an overarching theme among various federal and state laws as a legislative catch-all term that has differing definitions dependent of proposed legislation that typically center around features of certain semi-automatic firearms. Note, this is not to be confused with the term Assault Rifle, which is defined by the Defense Intelligence Agency (1970) to mean a machine gun that is single person portable, selective fire (meaning it has both automatic and semi-automatic functions) and chambers an intermediate cartridge from a detachable magazine. The terms assault weapon (or firearm) and assault rifle are constantly confused with one another despite being extremely different technologies. Additionally, due to the Hughes Amendment, a part of the Firearms Owners Protection Act (1986), which is a civilian machine gun ban, assault rifles made after 1986 are not permitted for private purchase, and therefore, not a concern for this case.

71. In this record the term repeater or repeating firearm is defined as a firearm, of all types, that can fire more than one round before needing to be manually reloaded. A magazine is a vital part of the firearm; it is a container, detachable or fixed, that holds and feeds ammunition into a repeating firearm. In the periods being discussed, there are repeating firearms that do not

use magazines, such as revolvers, which use a rotating cylinder that is as important and integral as a magazine is to fire a gun. Capacity to refer specifically to the number of rounds of ammunition that can be held within a firearm. Please see **Exhibit B** for more definitions.

II. GENERAL FIREARMS HISTORY

72. **History of Sport and War.** The expression “weapon of war” is used a lot in modern and historical discussions surrounding firearms. Today, it is used as an umbrella term to describe a range of different firearms that people perceive as being useful to warfare, regardless of whether they were actually used on or designed for the battlefield. How the expression is used today implies a distinct line between firearms made for the military and firearms made for the civilian market. However, that line for centuries has always been blurred.

73. Once firearms were developed, technology often advanced too quickly for common battlefield use, finding popularity in the civilian market. Military firearms in a general sense were limited by tactics, government bureaucracy, and expense, while civilian arms, until recently, were predominantly limited by individual budget. Additionally, civilian arms could be employed for far greater number of uses, including hunting, self-defense, and target shooting. The earliest firearms technology appeared on the battlefield by the thirteenth century. The hand cannon, or handgonne, was little more than the name suggests, a cannon for your hands. The user utilized a touchhole and external fire source to ignite powder and fire the gun (**Exhibit C**). This primitive technology may not have been designed for a sporting purpose, but once it was designed, inventors pushed the boundaries, capabilities, and usages of firearms into the future. And while the hand cannon specifically may not have been used for sport, other military weapons of the time such as longbows and crossbows were popularly used for target shooting

competitions in fairs during the Middle Ages.

74. The first true ignition system, the matchlock, was developed around 1400. This firearm, which utilized a burning match cord, was a popular military arm used for centuries around the world (**Exhibit D**). By the end of the 1400s, however, matchlocks and subsequent ignition systems also began appearing in early target shooting competitions (**Exhibit E**). Another example of a firearm being adopted for civilian use dates a century after the matchlock. In the first decade of the 1500s, a highly advanced handgun was developed, the wheellock. This gun, developed for use on horseback, was operated by the turning of a spring-loaded wheel (**Exhibit F**). While it saw some battlefield use, it was expensive and difficult to repair. As a result, it was used for specialized purposes on the battlefield in Europe, but not as much in the colonies. However, the technology was considered so advanced, some European countries made and used wheellocks for sport in the 1800s. Another example of superior technology being used by civilians rather than military is rifling. Rifling, the boring out of the inside of a barrel with spiral lands and grooves to spin a projectile, thus making it more accurate, was developed in the mid-1400s and appeared predominantly in civilian arms, with a few military exceptions in the American Revolution, until improved developments in ammunition technology allowed it to be more commonly adopted on the battlefield by the mid-1800s (**Exhibit G**). Although in many instances, such as with the infantry, it was not until later in the nineteenth century that tactics caught up enough for rifling to be fully utilized.²

75. Before the ability to mass manufacture firearms, guns often were privately made

² Examples of rifled matchlocks do exist. Rifled wheellocks are far more common as they were so often used for hunting. Halbrook, Stephen. *America's Rifle: The Case for the AR-15*, pg. 101: "Around 1450, a German gunsmith cut spiral lands and grooves inside a gun barrel...such guns were called riffeln"

by gunsmiths. Although armories existed in some form for centuries, there was significant cross pollination among gunsmiths, who did not work autonomously from one another. Rather, between the sixteenth through eighteenth centuries in Europe, the process of becoming a gunmaker was governed by guilds. These associations set rules about how to identify prospective students as well as create a standard for what they would be taught. As a result, ideas concerning the construction and decoration of firearms flowed freely throughout continental Europe. Another factor that allowed makers to emulate work was the widespread distribution of pattern books illustrating the latest fashions in arms in the years following 1640. Primarily produced in Paris, these books were eagerly sought after by makers throughout Europe and in the eighteenth century even made their way to the American colonies.³

76. Although two armories did exist in the United States around the time of the Founding Era, many guns for the battlefield were made or assembled by individuals or received via foreign aid. It is estimated that 2,500-3,000 gunsmiths worked in the colonies alone.⁴ They, as private citizens, were responsible for making guns for both the military and civilians. While the standard infantry arm during the American Revolution was a smoothbore (no rifling) musket, there were some regiments during the War that used a common civilian firearm at the time, the American long rifle (**Exhibit H**). The long rifle was a modified design from the German jaeger (hunting) rifle that tended to have a longer barrel and a smaller caliber than its German counterpart. This civilian rifle was the far superior firearm in terms of accuracy compared to the inaccurate military smoothbore musket. However, because of the type of projectile employed at

³ Information from the exhibition narrative. Houze, Herbert G. Co-Curator. "Art of the Hunt: Decorated European Sporting Arms from 1500-1800." Exhibition. Houston Museum of Natural Science, 2019.

⁴ Moller, George D. *American Military Shoulder Arms: Volume 1*. University of New Mexico Press, 2011. P.107

the time – a round musket ball – the process to load was slower for rifles because the ball had to fit snugly within the lands and grooves of the rifling, therefore it was not feasible for expansive military adoption.⁵ Examples of long rifles, however, were made with two barrels that would swivel to compensate for that limitation (**Exhibit I**).⁶ The long rifle in the colonies served as a multi-purpose tool. It was capable of being used for hunting, self-defense, and target shooting. Important to note though that unless being made for large-scale military adoption, such as the smoothbore musket, and/or produced with the use of parts kits ordered from overseas, civilian arms could be made at the request of individuals or in small runs.

77. Target shooting was a part of American culture before the formation of the United States with colonists taking part in competitions known as “Rifle Frolics.” In fact, David Ramsay in his “History of the American Revolution” (1789) spoke about the Battle of Bunker Hill (1775). He wrote, “None of the provincials in this engagement were riflemen, but they were all good marksmen. The whole of their previous military knowledge had been derived from hunting, and the ordinary amusements of sportsmen. The dexterity which by the long habit they had acquired in hitting beasts, birds, and marks, was fatally applied to the destruction of the British officers.”⁷ This tradition has continued throughout American history, especially after the Civil War. For example, the National Rifle Association was founded by Union officers in 1871, and its core purpose was “to promote and encourage rifle shooting on a scientific basis.” What

⁵ Until the development of a successful conically shaped bullet (rather than a round musket ball) by Claude Etienne Minie and modified by James Burton at Harpers Ferry, rifling was expensive and slow to load. For a round ball to effectively spin in rifling, it had to fit perfectly which slowed the loading process. However, it was perfect for target shooting as well as hunting and specialized military use. Since tactics by the military were still shoulder-to-shoulder fighting, accuracy was not of prime importance, so militaries used smoothbore (unrifled) barrels for their standard equipment.

⁶ Examples can be found in the Cody Firearms Museum.

⁷ Halbrook, Stephen. *The Founders of the Second Amendment: Origins of the Right to Bear Arms*. Pg. 96-97

resulted was the proliferation of international shooting competitions.⁸ Another example is the Olympic sport of Biathlon, a sport which involves both skiing and target shooting, dating to 1767 in Europe. It was initially created for government use in places like Norway. That purpose persisted for centuries, even after becoming an international sport. In the 1930s, Finnish troops still used skis and rifles for patrol. Until recently, the firearms used in Biathlon and other disciplines of the shooting sports, often used modified versions of centerfire NATO cartridge firearms (**Exhibit J**).⁹ By the nineteenth century, progress on manufacturing processes allowed more firearms of more varieties to be available to the U.S. government as well as civilians. Many repeaters of all sorts produced during this century came in specific models indicating sporting vs military variants.¹⁰

78. The line between military and civilian arms was certainly blurred at the founding of the country. While the military, as previously referenced, sometimes utilized superior civilian arms, civilians could also possess guns that were traditionally associated with the military, such as cannons.¹¹ That blurred line also extended to the role of the civilian and soldier. In the colonies and in early America, certain citizens were required to serve in their militias with firearm and ammunition requirements and some soldiers carried their personal firearms into battle. By the American Civil War, it was not unheard of for soldiers to privately purchase firearms that the U.S. government had not adopted or did not issue to them for use in battle. After the war, even military issue weapons that were used in war were often sold on the civilian

⁸ The National Rifle Association of America was founded after the National Rifle Association in the United Kingdom (1859).

<<https://home.nra.org/about-the-nra/>> Accessed June 15, 2023

⁹ An example of a centerfire modified firearm can be found in the Cody Firearms Museum.

¹⁰ Flayderman, Norm. *The Flayderman's Guide to Antique American Firearms...and their Values*. 9th Ed (2019). This book is considered the gold standard in the evaluation of antique American made firearms. It provides not only firearms organized by manufacturer but also by type, such as repeater, sporting, military etc. Here is just one example: pgs. 694-695

¹¹ Moller, George D. *American Military Shoulder Arms: Volume I*. University of New Mexico Press, 2011. P.107

market. After the Civil War, soldiers could buy their firearms and many dealers and distributors sold the surplus in mass in their catalogs or at stores for even lower prices. According to Springfield Armory National Historic Site, “many thousands [of] cheap surplus weapons were released into private hands through General Orders 101, providing rifles, pistols, carbines, and muskets that found their ways into the hands of Americans in the decades following the Civil War.”¹² The tradition of selling military arms to civilians continues today with firearms such as the Springfield Model 1903 bolt action rifle and even with semi-automatics such as the M1 Garand rifle, the M1 carbine, and the Model 1911 pistol.¹³

79. To summarize, there has always been an ebb and flow of civilian and military firearms for centuries, some with clearer lines than others. It is unfair to suggest that historically a gun at the time of its use would have been completely understood as only for war or sport because there was such interchangeability.

¹² Springfield Armory details this information here <<https://www.nps.gov/spar/learn/historyculture/a-springfield-rifle-musket.htm>> Accessed June 15, 2023

¹³ Today, postwar weapon surplus guns including several semi-automatic firearms such as the M1 Garand are sold through the Civilian Marksmanship Unit <<https://thecmp.org/sales-and-service/1911-information/>> <<https://thecmp.org/sales-and-service/services-for-the-m1-garand/>> Accessed June 15, 2023

80. **Timeline of Major Inventions.** This timeline is not comprehensive of every major incremental development in firearms and ammunition history; however, it highlights the evolution in technology relevant to this case. Importantly, many of the greatest technological leaps occurred in the first three hundred years of development, with the initial invention of many technologies that are still employed in modern firearms. Later innovations, even into the mid-twentieth century, have tended to be more gradual refinements.¹⁴ Terms in bold that are not defined in the terminology section can be found in **Exhibit B**.

- Ca 1000: Invention of the **Fire lance**.
- 1267: English academic, Roger Bacon records **gunpowder**. Note: Gunpowder recipes and use predates this in China by centuries
- Ca 1280s **Hand cannons** were in use in China (surviving example exists)
- 1300s: The earliest examples of **breechloaders** appear in large guns that are set up on a device to swivel.
- Ca 1400: The appearance of the first true ignition system, the **matchlock**
- 1450: **Rifling** is invented
- Ca 1500-1510: The **wheellock** is invented.
- 1620-1625: True **flintlock** is invented.
- Ca 1640: Bayonets are introduced.
- Ca 1680: The first known **revolver** is created, and the cylinder is self-rotating.
- 1714: English ordnance begins buying uniformed parts for muskets
- 1718: The Puckle gun is invented. It is a flintlock revolving cannon patented by British inventor, lawyer, and writer James Puckle
- 1730s: American **long rifles** were made by German immigrants.
- 1774: Patrick Ferguson invents a **breechloading** flintlock rifle
- 1791: Ratification of the Second Amendment
- 1800: Discovery of Fulminates by Edward Charles Howard that will be used in **percussion** ignition firearms.
- 1808: Early form of self-contained cartridge is invented by Jean Samuel Pauly
- 1811: John Hall patents a **breechloading** rifle – a key step in the evolution of interchangeable parts
- 1818: **Percussion cap** is invented; Wheeler and Collier flintlock revolver is ordered in bulk.
- 1825: **Percussion** ignition becomes more common; Johann von Dreyse experiments with his needle gun (an early **bolt action**)

¹⁴ This timeline was drawn largely from the one organized, reviewed, and exhibited at the Cody Firearms Museum.

- 1829: True **centerfire** is invented by Clement Pottet
- 1835: Colt's first **revolver** patent in England; 1st telescopic sight (Morgan James out of Utica, NY)
- 1846: Claude Etienne **Minie** develops successful conically shaped projectile
- 1847: Walter Hunt patents a tubular **magazine**
- 1854: Smith & Wesson patent the **lever action**
- 1855: Rollin White patents a box **magazine**
- 1857: **Rimfire metallic cartridges** are developed by Smith & Wesson
- 1860: Spencer repeating rifle and Henry **lever action** rifle is sold
- 1862: Gatling Gun is patented
- 1864: Robert Wilson patents a detachable **magazine**
- 1865: Springfield armory designer Erskine Allin converts rifled muskets to **breechloaders**; Winchester becomes its own company
- 1873: Colt introduces their Model 1873 **single action revolver**
- 1877: Colt introduces their **double action revolver**
- 1884: **Smokeless powder** invented; **slide action** is popularized
- 1885: Hiram Maxim develops a **machine gun**
- 1886: **Box magazine** on the Mannlicher **bolt action**
- 1893: **Semi-automatic pistol** with detachable **magazine** introduced by Hugo Borchardt
- 1895: Colt Browning **machine gun** invented
- 1898: Antique Firearms Cutoff date – firearms, other than machine guns made before 1898 are not federally firearms. This designation was established by the Gun Control Act of 1968
- 1899: Arthur Savage begins selling lever actions with rotary **magazines**
- 1902: Hiram Percy Maxim invents the **silencer**
- 1905: John Moses Browning's Model 1905 is important development in what becomes the Colt Model 1911, chambered in his designed caliber the .45 ACP
- 1918: Browning **Automatic Rifle** and Thompson **submachine gun** are developed
- 1934: The National Firearms Act
- 1936: Adoption of the M1 Garand **Semi-automatic rifle**
- 1942: M1 Carbine adopted with the .30 M1 carbine cartridge
- Ca 1944: The STG 44 becomes the 1st production **assault rifle**.
- 1951: AKM **assault rifle** enters service
- 1956: Eugene Stoner develops the AR-10, Jim Sullivan refines it to become the AR-15
- 1959: Armalite sells rights to Colt to produce AR-15
- 1964: M16 adopted by US Military; Colt delivers AR-15s to the commercial market
- 1968: Gun Control Act
- 1970: HK VP 70; 1st **semi-automatic** polymer pistol released
- 1986: Glock **semi-automatic** polymer pistol is sold in United States; Hughes Amendment

III. 600 YEARS OF HISTORICAL DEVELOPMENT OF FIREARM TECHNOLOGIES GENERALLY ASSOCIATED WITH ASSAULT WEAPONS BANS AND MAGAZINE LIMITATIONS

81. There are many terms used to define rifles, pistols, and shotguns regulated in assault weapons (firearms) bans. Regardless, the technologies banned by the statutes represent incremental change in technological innovation over the past 600 years.

82. **General History of Repeaters.** As will be seen below, New Jersey's legal limit of ten rounds in an ammunition magazine is historically arbitrary, particularly for the time frame being discussed.¹⁵ The capacity for repeaters and magazine-fed repeaters were not fixed to one number, rather the number was constantly changing depending on design. Even model variations, such as a Winchester Model 1866, feature a range of different capacities based on the size of the magazine, the barrel, the caliber etc. Therefore, a ten-round ammunition capacity is not notable historically. As previously mentioned, repeater is a firearm of any type that can fire multiple rounds before having to manually reload.

83. The concept of a repeater dates to the earliest technology of firearms. Hand cannons even came in multi-barrel variations (**Exhibit K**). While some repeaters were employed on the battlefield, they would not be widely popular for use in war until the late nineteenth century. That did not mean, however, that innovation in repeating technology was stymied. In fact, it was quite the opposite. Without the confines of wartime tactics and budget, many repeating firearms were commissioned by civilians who utilized them. The simplest method of

¹⁵ The federal government itself did not make this distinction until the 1990s. This date is referencing the Public Safety and Recreational Firearms Use Protection Act (1994). Additionally, there are many resources that can showcase the number of repeaters available in this time frame in the United States, but the place that aggregates them the best is Flayderman, Norm. *The Flayderman's Guide to Antique American Firearms...and their Values*. 9th Ed.

producing arms capable of firing more than one round without manually reloading initially was to fit a firearm with more than one barrel. However, due to weight limitations, gunmakers began experimenting with other means of producing repeating arms during the sixteenth century. One of the first methods attempted involved superimposed loads, which were successive charges of powder and ball on top of each other that were separated by wadding or the projectile itself in one barrel. They were fitted with locks that either had multiple cocks and pans or a single lock that could slide upon a rail. One such example was a sixteen-shot firearm made in 1580 (**Exhibit L**).¹⁶

84. By the 1630s, a Dutch gun making family, Kalthoff (also spelled in some sources, Calthoff), began experimenting with a design that allowed up to fifteen shots to be fired in rapid succession. It utilized a tubular magazine located in a pistol or rifle stock to hold powder and balls (**Exhibit M**)¹⁷ This system was so innovative it was reproduced and modified for over 150 years. According to late historian Herbert G. Houze, “their longevity is perhaps best demonstrated by the fact that Admiral Horatio Nelson owned a repeating flintlock pistol of their basic design, as did President Thomas Jefferson.”¹⁸ Also, by the mid-seventeenth century in Italy, other magazine-fed repeaters were being developed. According to the Royal Armouries (Leeds), an early example can be found at the Musée de l'Armée which was made by Giacomo Berselli of Bologna in the late 1660s.¹⁹ However, more well-known is the Lorenzoni of Florence. The firearm is a magazine-fed repeater that came in pistol and rifle form. This design

¹⁶ This firearm was on display at the National Firearms Museum's location in Missouri. Winant, Lewis. “A 16-Shot Wheel Lock,” *America's 1st Freedom* (2014).

¹⁷ Houze, Herbert G. Co-Curator. “Art of the Hunt: Decorated European Sporting Arms from 1500-1800.” Exhibition. Houston Museum of Natural Science, 2019.

¹⁸ Ibid

¹⁹ For more information, visit: <https://royalarmouries.org/stories/our-collection/the-christmas-connection-to-captain-souths-lorenzoni-pistol-our-collection/> Accessed June 15, 2023

was copied and modified by numerous designers after its invention with various configurations and magazine capacities (**Exhibit N**). In addition to magazines, revolving technology was also being developed during this time. The Dafte revolver, for example, had a “single fixed barrel mounted to a central arbor upon which a cylinder of chambers rotates.” (**Exhibit O**)²⁰

85. In 1722, Boston designer John Pim demonstrated a firearm that was alleged to have been “loaded but once” and “discharged eleven times following with bullets, in the space of two minutes.”²¹ Additionally, a Boston gunsmith named Samuel Miller advertised for a twenty-shot repeater.²²

86. In 1724, another designer Emmanuel Wetschgi of Augsburg advertised his flintlock magazine firearm in a handbill (**Exhibit P**). According to Houze:

“Not only did he describe his design’s advantages and the ease with which it could be used, he also included an engraving showing one of his pistols being fired. This image, which is believed to represent Christian III, Count Palatine of Zweibrucken with the inventor by his side holding a sporting gun built on the same system...More importantly, it also incorporates what may be the first true advertising slogan...’What other pistols can shoot multiple rounds on one loading as accurately, rapidly, and as far, as today’s Wetschgi?’”²³

87. Another example of the Lorenzoni style was a firearm designed by British gunsmith, John Cookson in the late seventeenth century (**Exhibit Q**). A gunmaker in Boston, also named John Cookson – it is not clear if this person was the same Cookson from England, a relative, or a coincidence – published an ad in the *Boston Gazette*, in 1756, advertising a nine-

²⁰Ferguson, Jonathan. “An Important Early Self-Rotating Revolver c. 1680, possibly by John Dafte.” *The Antique Arms Fair at Olympia London*. Pg. 30

²¹ Kopel, David and Joseph Greenlee. “The History of Bans on Type of Arms before 1900.” *Journals of Legislation*, page 38 (Forthcoming 2024)

²²Ibid, 38

²³ Houze, Herbert G. Co-Curator. “Art of the Hunt: Decorated European Sporting Arms from 1500-1800.” Exhibition. Houston Museum of Natural Science, 2019.

shot repeating firearm (**Exhibit R**). Around the same time a Cookson-type twelve-shot repeater was made by gunmaker John Shaw.²⁴ Another example from the 1750s in America is the Belton repeating fusil. This gun was invented by Joseph Belton around 1758 (**Exhibit S**). Not a magazine repeater like the Lorenzoni, the Belton utilized superimposed loads. Notably, he petitioned the Continental Congress during the American Revolution to adopt his firearm. In 1777, Belton showcased a musket that shot sixteen rounds at once in front of General Horatio Gates, Major General Benedict Arnold, and scientist David Rittenhouse. The observers wrote on July 10, 1777:

“Having Carefully examined M. Belton’s New Constructed Musket from which he discharged Sixteen Balls loaded at one time, we are fully of Opinion that Muskets of his Construction with some small alterations, or improvements might be Rendered, or great Service, in the Defense of lives, Redoubts, Ships & c. & even in the Field, and that for his ingenuity & improvement he is Intitled to a handsome reward from the Publick.”²⁵

88. The Continental Congress ordered one hundred Belton firearms for use in the Continental Army. However, this order was canceled. Surviving and modified examples of the Belton design were made by his partner in the 1780s, including artifacts at the Royal Armouries in Leeds, that include a detachable magazine variation. One also has a sliding spout meant for port fire – a slow-burning ignition system. When locked into place, the user would essentially ignore the main trigger, frizzen, and cock and just pull the lock backwards one stage at a time, making the firearm, while not strictly a semi-automatic, have a similar rate of fire to that or a

²⁴ An example of this firearm can be found in the National Firearms Museum <<https://www.nramuseum.org/the-museum/the-galleries/the-road-to-american-liberty/case-22-the-paper-cartridge/cookson-volitional-repeating-flintlock.aspx>> It is also discussed here in this site linked directly from the Royal Armouries: <<http://firearmshistory.blogspot.com/2014/02/the-cookson-repeater.html>> Accessed June 15, 2023

²⁵ Kopel, pg. 38

double action.²⁶ Around 1779, the Girardoni (also spelled Girandoni) air rifle was developed. It was a repeating arm that could fire twenty-two rounds from a tubular magazine (**Exhibit T**).²⁷ The magazine itself was quick to reload with the help of speed loading tubes. Speed loading tubes or speed loaders are essentially a device through which you can load ammunition quickly into a magazine or a firearm. There are several ways this can be employed. Additionally, the Girardoni could fire forty rounds before needing air to be pumped again.²⁸ The Girardoni was used by Meriweather Lewis on the Lewis and Clark Expedition (1804-1806). Over 1,000 Girardonis were made for service with the Austrian military, but light weight examples were allegedly produced in sporting variations.²⁹ This design also was copied by gunmakers around the world.³⁰

89. Around the ratification of the Second Amendment, other repeaters were being developed throughout the world, including multi-barrel firearms in which all barrels could fire at once, such as the Nock Volley gun and Duck's Foot pistol (**Exhibit U**).³¹ There is also a surviving example of a firearm commissioned by an individual around the end of the 1700s. It is

26 The Royal Armouries has two of these detachable magazine Belton repeaters. It can be seen here: < <https://www.youtube.com/watch?v=wOmUM40G2U> > Accessed June 15, 2023. The description of the operation of fire is from a conversation with Keeper of Arms, Jonathan Ferguson.

27 Kopel, David. "The History of Firearms Magazines and Magazine Prohibitions." Albany Law Review, Vol. 88, 2015, pg. 853

28 Kopel, David & Joseph G.S. Greenlee. "The History of Bans on Types of Arms before 1900. Pg. 40.

29 For more information on Lewis and Clark and the Girardoni, the most comprehensive research on the Girardoni air rifle was done by scholar Michael Carrick. His research is footnoted in this summary article of the Lewis and Clark firearms that can be found here:

<http://www.westernexplorers.us/Firearms_of_Lewis_and_Clark.pdf> Accessed June 15, 2023. Additionally, Ian McCollum, one of the foremost authorities on firearms technology in the United States, has done several videos and articles about the firearm. This is one article he wrote

<<https://www.forgottenweapons.com/rifles/girandoni-air-rifle/>> Accessed June 15, 2023. A surviving example of a Girardoni can be found:

<<https://www.nramuseum.org/guns/the-galleries/a-prospering-new-republic-1780-to-1860/case-8-romance-of-the-long-rifle/girandoni-air-rifle-as-used-by-lewis-and-clark.aspx>> Accessed June 15, 2023, Rock Island sold a sporting variation in 2018:

<<https://www.rockislandauction.com/detail/75/3293/girandoni-system-repeating-air-gun>> Accessed June 15, 2023

30 An example of a Russian copy of a Girardoni Rifle can be found in the Cody Firearms Museum

31 An example of the Duck's Foot Pistol can be found here: <<https://www.recoilweb.com/ducks-foot-pistol-old-school-172784.html>> Accessed January 31, 2023. An example of the Nock Volley Gun can be found here by British scholar Matthew Moss

<https://armourersbench.com/2020/01/12/nock-volley-gun/> Accessed June 15, 2023

a fourteen-barrel double Nock volley gun style rifle. Each set of seven barrels has its own lock plate and trigger. To better facilitate loading, the firearm came with a speed loader that allowed the user to pour the charge into a small device that the user could then pour down seven barrels simultaneously. This firearm was a sporting arm. To facilitate accuracy at such a large size, it has a hand rest forward of trigger, under the barrels. In the event the user only wanted to use one set of seven barrels, he had a replaceable stock made with one lock plate and trigger.³² In America, Joseph Gaston Chambers devised a repeating musket that could fire, according to him, twenty rounds a minute (**Exhibit V**). He approached the U.S. War Department in 1792 with his invention. The Secretary of War, Henry Knox, was interested in finding a firearm that would supply more power and requested that one of Chambers' firearms be acquired for testing. A demonstration was set up at Alexander Hamilton's "Seat" on the Schuylkill.³³ Furthermore, Chambers petitioned Thomas Jefferson for help spreading the word of his invention. To which Jefferson referred him to the U.S. Patent Office.³⁴ His invention was not adopted initially with concerns for structural stability, but his repeating muskets, pistols and seven-barreled swivel guns were adopted by the U.S. Navy and Pennsylvania for the War of 1812. Between September 1813 and September 1814, Philadelphia arms makers would produce at least fifty-three seven-barreled swivel guns that could fire two-hundred bullets a piece, two hundred repeating muskets, and one hundred repeating pistols. Outside of the United States, European countries were also

32 McCollum, Ian. *Forgotten Weapons*: <<https://www.youtube.com/watch?v=ivdlcHUwaEw>> Accessed June 15, 2023

33 Fagal, Andrew J.B. "The Promise of American Repeating Weapons, 1791-1821." *Age of Revolutions*. Fagal is the Associate Editor at Princeton University's Papers of Thomas Jefferson. <<https://ageofrevolutions.com/2016/10/20/the-promise-of-american-repeating-weapons-1791-1821/>> June 15, 2023

34<<https://founders.archives.gov/?q=Joseph%20chambers%20burst&s=1111311111&sa=&r=1&sr=>>> Accessed June 15, 2023

interested in his inventions.³⁵ Another repeater designed in 1821 was known as the Jennings repeating flintlock. It was capable of firing twelve rounds before having to reload (**Exhibit W**).³⁶

90. The foregoing demonstrates that numerous types of repeating firearms existed leading up to, around, and directly after the time of the ratification of the Second Amendment, which in some cases, had direct ties to Founding Fathers. As was typical of the era, these were often made by private gunsmiths and sometimes individually commissioned. During the Founding Era and after, unless employed for military purposes with the need for quantity, firearms at large were not produced in volume as they would have been by the late nineteenth century after great shifts in the industrial era. We also know that Americans were likely aware of various European innovations, since surviving examples in America are sometimes modeled after those firearms, from the simple musket that supplied much of the US military during the American Revolution to repeaters such as the Cookson, following a Lorenzoni magazine style. Overseas travel and the exchange of information was also common. For example, as Minister of France, Thomas Jefferson traveled overseas in the 1780s, where he learned about the concept behind interchangeable parts. Notably, even to some of the less successful firearms designs with flaws, imperfections, and issues, it is interesting that while the Founding Fathers were aware of them, manufacturers could continue to produce those designs, to my knowledge, without regulations, unlike the fire safety laws that were enacted to regulate gunpowder.

91. It is also interesting to note that the reason we are aware of these firearms, in most cases, is that examples have survived thanks in large part to museums and private collectors. In fact, gun collecting dates to the 1600s. While the earliest firearms collector is

³⁵ Fagal

³⁶ Flayderman, Pg 683

credited to be King Louis XIII of France, firearms were not only owned by royalty or the aristocracy. For example, in 1666, according to Houze, it was recorded that the merchant, Alexandra Delamarre, had put together a collection numbering some thirty pieces. Gun collecting continued to grow ever more popular during the eighteenth century and some truly large collections were assembled. For example, one collector, Joseph von Dufresne of Munich, Germany, at the time of his death in 1768 possessed 277 pistols, 457 long arms, plus crossbows and other items.³⁷ Even in the colonies, estate sales featured repeating firearms, including an advertisement from South Carolina (1736) (**Exhibit X**).³⁸

92. Importantly, this meant that those of the Founding Era were aware of significant innovations in firearms technology over time and it's reasonable to expect that innovation to continue into the future – the most notable example being the major difference in technology between the military smoothbore muskets used by most soldiers during the American Revolution and the far more advanced American long rifles owned by the American colonist during that same time frame.

93. Prior to the American Civil War, there were many makers and manufacturers of repeating firearms, however, the tradition of individual gunmakers was still prominent. As manufacturing processes advanced, these concepts evolved into more standard repeaters produced in greater quantities. The transition of firearms being made by private gunmakers increasingly shifted to factories by the mid-nineteenth century. Inline manufacturing, interchangeable parts, and mass production impacted not only the types of firearms that were

³⁷ Houze, Herbert G. Co-Curator. "Art of the Hunt: Decorated European Sporting Arms from 1500-1800." Exhibition. Houston Museum of Natural Science, 2019

³⁸ The South Carolina Gazette. Number 125. June 19, 1736.

available, but also quantity and quality. While repeating firearms, magazine-fed or not, exceeded ten-rounds centuries prior, the number of distinct types of repeaters in general by the middle of the nineteenth century was staggering.

94. With these industrial changes, repeaters continued to evolve as they had for centuries. Around 1814, another step in revolving technology appeared with the Collier flintlock (later percussion) revolving rifles, pistols, and shotguns (**Exhibit Y**). Decades later, pepperbox pistols, a revolving pistol with multiple barrels that were manually rotated on a central axis, were popular in the United States by the 1830s, some were even taken out west with California gold miners (**Exhibit Z**). One maker of pepperboxes alone, Ethan Allen, between the 1840s and 1850s made over forty variations of this style of firearm.³⁹ While many pepperbox pistols typically fired four to six shots, some were capable of firing twelve, eighteen, or twenty-four rounds.⁴⁰ It becomes difficult to quantify the number of repeaters on the market though because makers were so plentiful. In 1836, a year before Samuel Colt's first patent in England of his revolving mechanism, the patent process was standardized through the United States Patent Act. That year, Samuel Colt took out two patents for five or six-shot revolving rifles and pistols (**Exhibit AA**). As a result, he essentially owned the legal right to produce the revolver until the patent expired in the mid-1850s. This Act created a flurry of production, innovation, and design especially towards repeaters and magazines to varying degrees of success. The fact though that so many people were trying to design the next great repeater shows the desire to capitalize on this technology.⁴¹ It should be noted, however, that while 1836 was an important year, the

³⁹ Flayderman, pg. 56-61

⁴⁰ Kopel, pg. 854. Additionally, pinfire pistols and long guns can be found in museum collections with capacities greater than ten rounds.

⁴¹ Examples of these patented repeaters include Volcanic lever actions, the Jarre Harmonica pistol and rifle, Porter and Genhart turret rifles,

recognition of the importance of patents to support technological innovation dates to the Constitution (See Article I; Section 8). As Secretary of State, Jefferson himself was involved in the earliest patent process. All this further demonstrates the expectation of the Founding generation that technological innovation was not only likely but to be encouraged.

95. Regardless of whether or not a design was successful that desire to innovate has always been present. One such attempt was in 1851, when Perry W. Porter developed a nine-shot repeating rifle and pistol that instead of a traditional cylinder as in Colt's design, the cylinder is seated in a way that the chambers point towards the shooter and anyone nearby (**Exhibit BB**).⁴² Another attempted design, in which a proof of concept prototype survives, is the Lindner patent of 1856, which is a rifle with a six-round cylinder and nine-round tubular magazine. The gun design could hold multiple magazines at a time that could extend the length of the barrel (**Exhibit CC**).

96. Successful innovations obviously did occur as well. Horace Smith & Daniel Wesson developed a self-contained metallic cartridge to pair with a revolver they designed and would sell when Colt's patent expired in the 1850s. The invention of their revolver coupled with a patent by designer Rollin White to have a bored through cylinder, allowing the revolver to be loaded from behind, greatly increased the speed of reloading the firearm (**Exhibit DD**). Additionally, in 1854, Smith and Wesson patented a lever action design called the Volcanic, which was based on a few earlier designs in the 1840s and would serve as the basis for the Winchester lever actions (**Exhibit EE**). This design would be modified by Benjamin Tyler

Josselyn Chain Revolvers etc. More successfully were revolvers and repeaters by Smith & Wesson, Remington, Merwin & Hulbert, Henry, Winchester etc.

⁴² The 1837 Cochran turret rifle operated off a similar construct with a horizontally seated cylinder.

Henry into the Henry Model 1860 lever action rifle (**Exhibit FF**). The next iteration of lever action was the Winchester Model 1866 (**Exhibit GG**). The main innovation with this gun was Nelson King's Patent in May 1865, that allowed the firearm to be loaded from the receiver, a faster and superior design to Henry in which the user had to essentially load the tubular magazine from the muzzle.

97. Winchester was not the only manufacturer of repeating firearms in the mid to late nineteenth century. Other companies were producing competitive repeaters, such as the Evans Repeating Rifle, which was made between 1873 and 1879. Approximately, 12,200 were made and they came in three variations, Sporting (approximately 4,350 made), Military (approximately 3,200), and Carbine (not specified as either sporting or military, approximately 4,700 made). The Evans held magazine capacities at twenty-eight, thirty-four, and thirty-eight rounds (**Exhibit HH**)⁴³ The Evans as well as other companies such as the Spencer Repeating Rifle, Fogerty Repeating Rifle, Adirondack Firearms, Bullard Repeating Arms, Burgess Gun, and the Whitney Arms Companies also were making repeaters. However, some names are lesser known, partially because Winchester realized the value in their designs and the threat of them as a competitor, so they acquired the companies.⁴⁴ Other major manufacturers, such as Marlin, quickly popped up as well by the 1890s as a direct competitor to the Winchester lever action as did Savage firearms, including the Model 1899, equipped with a rotary magazine (**Exhibit II**). In all, there were over one hundred manufacturers or makers in the United States alone producing some type of

⁴³ Flayderman, pg. 694-695

⁴⁴ An entire exhibit at the Cody Firearms Museum is dedicated to the many repeating arms companies that Winchester acquired. Examples are archived in the Winchester Arms Collection.

repeating firearm leading up to and decades after the Civil War.⁴⁵

98. The experimentations in design ultimately led to incremental improvements on repeating technology, culminating in the design of automatic and semi-automatic technology. Automatic technology operation involves pressing a trigger to fire continuously until the user releases the trigger, the firearm runs out of ammunition, or the firearm malfunctions. Semi-automatic operation involves pressing a trigger to fire one round, eject a spent case, and load another to be fired on the next trigger pull. Today, most firearms are semi-automatic rifles, pistols, or shotguns. Semi-automatic technology was developed in the 1880s around the same time as automatic technology. Mannlicher is generally attributed to creating the first semi-automatic rifle, although his initial design was far from successful; handguns followed shortly after. The first mass produced semi-automatic pistol was the Hugo Borchardt designed C-93 with detachable eight-round magazine (**Exhibit JJ**). The Mauser C-96 (**Exhibit KK**) followed, as did John Moses Browning's Model 1899/1900 pistol, which by 1905 would serve as the basis of the iconic Colt Model 1911 semi-automatic pistol (**Exhibit LL**).

99. **Features**. Assault firearm bans and magazine limitation statutes often concern themselves with firearm features, such as detachable magazines, various types of grips, barrel shrouds, and threaded barrels. These features themselves have their own long history as they have often served to mitigate side effects from shooting firearms, including aiding in stabilization and individualized fit, as well as flash and sound suppression, which historically have had purposes in both sport and defense.

100. **Detachable Magazines**. As this Declaration has previously cited, magazines of

⁴⁵ Flayderman, Chapters V: A-F pages 50-299; Chapter VII: A, B, C Pages 351-387; Chapter VIII: A Pg458-524; Chapter XIII pages 691-697; Chapter XV: pages 709-733

many types existed as far back as the 1600s. They also come in many forms, such as tubular, box, rotary, etc. Within these subcategories, they can either be fixed or detachable. For example, more than half a century after Girardoni's tubular magazine, Walter Hunt received a patent for a fixed tubular magazine in the 1840s to pair with his invention, the Hunt Volitional rifle, which is the older direct ancestor to the Winchester lever action rifle (**Exhibit MM**).⁴⁶ On the other side, Christopher Spencer developed a tubular magazine in the butt stock that was detachable in 1860 (**Exhibit NN**). Beyond tubular magazines, there were other designs such as the Genhart turret rifle, from the 1850s, that had a detachable circular magazine with an externally visible shot/round counter and the Jarre Harmonica Pistol and Rifle with a detachable horizontally seated magazine that slides after each round is fired like a typewriter (**Exhibits OO & PP**)

101. In terms of box magazines specifically, Rollin White patented one in 1855 (**Exhibit QQ**).⁴⁷ A detachable version was patented in 1864 by Robert Wilson (**Exhibit RR**).⁴⁸ And a vertically stacked box magazine was patented by James Paris Lee in 1879 which was applied to several rifles including the Mannlicher Model 1886 bolt action rifle (**Exhibit SS**).⁴⁹ Even the earliest semi-automatic handguns utilized either fixed or detachable magazines. The Mauser C-96 had a fixed one, and the Borchardt C-93 detachable.⁵⁰

102. **Grips/Barrel Shroud**. The concept of a stabilizing entity to help not only simply hold the firearm but also do so with maneuverability and accuracy dates to the earliest arms and sporting guns. For example, early target shooting competitions relied on it. Schuetzen, a sport

⁴⁶ Hunt, Walter. US Patent 6663A (1849)

⁴⁷ White, Rollin. US Patent No 12648 (1855)

⁴⁸ Wilson, Robert. US Patent No 45105 (1864)

⁴⁹ Lee, James Paris US Patent No 221328 (1879)

⁵⁰ Kopel, 857 referencing *Standard Catalog of Firearms*. (2014), Gun Digest Books, pg. 708-709

dating to the 1600s that continues today, incorporates elaborate molded cheek pieces and palm rests. German Frei pistol of the nineteenth and twentieth centuries, essentially do the same. While these customizations may not fit the typical definition of a pistol grip or thumbhole stock, the intent is similar (**Exhibit TT**)

103. The simplest form of a stabilizing device is the *barrel shroud*, which is essentially just a forearm. The purpose of a barrel shroud is to prevent “burning the bearer’s hand.” By that definition, any firearm with a full-length stock has a barrel shroud, such as an eighteenth-century Brown Bess or early single shot pistols.

104. Stock design in and of itself necessities a *pistol grip*. These grips date to the 1700s. When taken literally, single shot flintlock and later percussion pistols sometimes would have the option to attach a removable stock. When assembled pistols become long guns and the grip from the pistol serves as the stabilizing device. This trend of detachable stocks continued with repeating arms, including several models of Colt revolvers, in the civilian and military market. Even semi-automatics such as the Borchardt C93 and Mauser C96 had detachable stock options. If a user did not have one of these models, universal holsters to convert a pistol to a rifle with a detachable stock existed (**Exhibit UU**). On firearms without detachable stocks, pistol grips appear on all variances of firearm actions. Standard rifles and shotguns would often have some sort of partial grip. Full pistol grips even made their way on machine guns by the end of the nineteenth century, including the Colt Model 1895, French Chauchat (1907) and several Maxim models. Submachine guns like the Thompson (1918) had them as well. Pistol Grips also appeared on other National Firearms Act firearms, outside of machine guns, such as Any Other Weapons, like the Ithaca Auto & Burglar (1922), the Harrington & Richardson Handy-Gun

(1921), and the Marble Game Getter (1908). The design continues to be used far into the twentieth century, including other semi-automatic firearms such as the M1A1 Paratrooper Carbine designed with not only a pistol grip but also folding stock (**Exhibit VV**).

105. *Forward grips*, on which the user holds a grip forward of the breech, have also been around since the late eighteenth century. The previously referenced fourteen-barrel firearm (ca 1795) has a forward grip. Additionally, another example is the French Magot rifle from the 1880s. Possibly one of the only copies of this gun is in the Cody Firearms Museum (**Exhibit WW**).

106. While not technically a grip, *thumbhole stocks* serve a similar purpose. It is more difficult to historically trace, but their regulation has had a deep impact on sporting and Olympic firearms in the modern era. Certain Olympic rifles feature thumbhole stocks, including several models of Winchester, dating to the 1950s. This type of concept or technology is a very prominent shooting sports feature.

107. **Folding/Telescoping Stock**. The Cody Firearms Museum has a folding stock snaphaunce blunderbuss that dates to between 1650-1700 (**Exhibit XX**). With early firearms, folding or adjustable stocks are not necessarily common because pieces in the civilian world were made by artisans prior to mass production. However, the appearance of detachable stocks – converting a pistol to a rifle/carbine – appear in the 1700s on flintlocks and continue to be incorporated on percussion, revolver, and semi-automatic guns. As guns were mass produced in scale, various models were often made, such as a Junior or Ladies rifle, to provide a different size option for the size or ability of the sport shooter. The flexibility of stock size in a telescoping stock is very important in the civilian market where comfort and having firearms suited for the

individual are preferable and feasible. In the early 1900s, and possibly earlier, consumers would be relegated to finding their correct stock size using Try Guns, which were carried by salesmen to allow the consumer to adjust the stock to fit them to see what size a given person needed. Two examples in the Cody Firearms Museum collection are the Winchester Model 12 and LC Smith Try Guns (**Exhibit YY**). Once an appropriate size was determined, the firearm would be made with a fixed stock. Folding stocks do make appearances in the military sphere with the M1A1 Paratrooper Carbine model as well as several submachine guns.

108. **Flash Suppressor/Threaded Barrel.** While the above concerns itself more with the fit of a firearm and how to stabilize it, other features exist to mitigate the negative side effects of shooting firearms.

109. Flash suppressors at their core are meant to reduce muzzle flash. The issue of a flash either giving away one's positions or temporarily distorting the vision of the user, dates to the earliest technology of firearms. Firearms, until the development of percussion ignition in the early nineteenth century, made use of an exposed flame at the breech of the gun. Hand cannons and matchlocks used burning matches to ignite gun powder inside the barrel. Wheellocks and flintlocks used pyrite and flint to create a spark. These technologies created a lot of smoke and flash which was a detriment to the user.

110. The modern concept of a flash suppressor appears on machine guns from World War I, including the Chauchat. The traditional flash hider on military arms, not classified as a machine gun, was used during WWII on guns such as the Lee-Enfield "jungle carbine" and has appeared on AR platform firearms, originally invented in the 1950s (**Exhibit ZZ**). Even the invention of a sound suppressor, known legally as a silencer, by Hiram Percy Maxim in 1902

suppressed flash. Silencers were heavily marketed to the civilian population as target accessories.

111. Another method to contribute to the ease of shooting is a threaded barrel for several purposes, including the use of a silencer, however, the concept dates back much further. An early idea of a quick attachment system in or on a barrel of a gun is the bayonet. Developed in the sixteenth century, the bayonet was commonly used for both military and civilian firearms. There have been a variety of muzzle devices that have been attached to a barrel (compensators, silencers, muzzle brakes, flash hiders etc.). While some early semi-automatic rifles, pistols, and shotguns had threaded barrels, the military did not always use threaded barrels for their suppressed firearms, nor did the civilian market. This is because Hiram Percy Maxim, the inventor of the Silencer, sold his silencer often with an adapter that allowed a silencer to be affixed without a threaded barrel, making the need for a threaded barrel or the thought that no threaded barrel would prevent the addition of a silencer moot.

IV. CONCLUSION

112. To summarize, this Declaration has looked at the long history of firearms around the world. It has looked at technologies specifically relevant to this case with a lens for their technical functions and their varied uses. One of the core takeaways from this report is the context of the interconnectivity between military and civilian firearms since the development of the first ignition system and why civilians have often had superior firearms. It also identifies major developments in firearm technology and establishes that some of the most significant changes in design occurred in the first few centuries, laying the foundation for most if not all modern firearms technology. Ultimately, firearms innovation is a continuum of gradual advancements in technology. Over time, such incremental advancements have contributed to the

increasing ability of individuals to operate their firearms effectively and safely.

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